SVE

Society For Visual Education, Inc.
A Business Corporation
1345 Diversey Parkway
Chicago, Illinois 60614-1299

SVE Basic Skill Boosters

Teacher's Manual

Science Corner: Planet Earth

20606-DS1
Dewey Decimal Number 551

20606-ASBTG

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Introduction

Science Corner: Planet Earth is intended to enhance students' basic understanding of the Earth's structure and of various geological phenomena. It is designed to provide general information, to demystify some of the ongoing changes in the Earth that affect our daily lives, and to stimulate further inquiry and exploration by students. Students are provided with opportunities to explore and interact with the material in several ways. To take full advantage of the program, students need to read and follow directions carefully, take measurements, read illustrations, record data, hypothesize causes and effects, make predictions, draw conclusions, and make generalizations. A Notebook in the program enables students to record some of their work while at the computer. They are thus provided numerous opportunities to develop study skills and the "tools" of scientific inquiry as they expand their knowledge of the world in which they live.

Learning Objectives

Science Corner: Planet Earth is designed with the following learning objectives in mind:

- to illustrate continental drift
- to show students some of the characteristics of the Earth's layers
- to explain how and why earthquakes and volcanoes occur
- to help students understand some of the forces and effects of erosion

Program Description

On the Program Disk, the user is first given an opportunity to receive instruction in using the program. Then, after loading the Student Disk, the user goes to the *Selection Screen,* from which five units can be explored. The units are: Continental Drift, Earth Layers, Earthquakes, Volcanoes, and Erosion. Each unit has two types of scenes: a main scene that provides an interactive simulation, and one or more supporting scenes. When a unit is selected, it opens to either an introductory supporting scene or to the main scene. The user explores and interacts with the main scene by following the on-screen instructions. Other supporting scenes provide additional learning and interactive activities.

Each unit includes a Notebook page on which students may record their observations and ideas. Students should be encouraged to use the Notebook throughout to help them express concepts in their own words. Notebook pages can be printed.

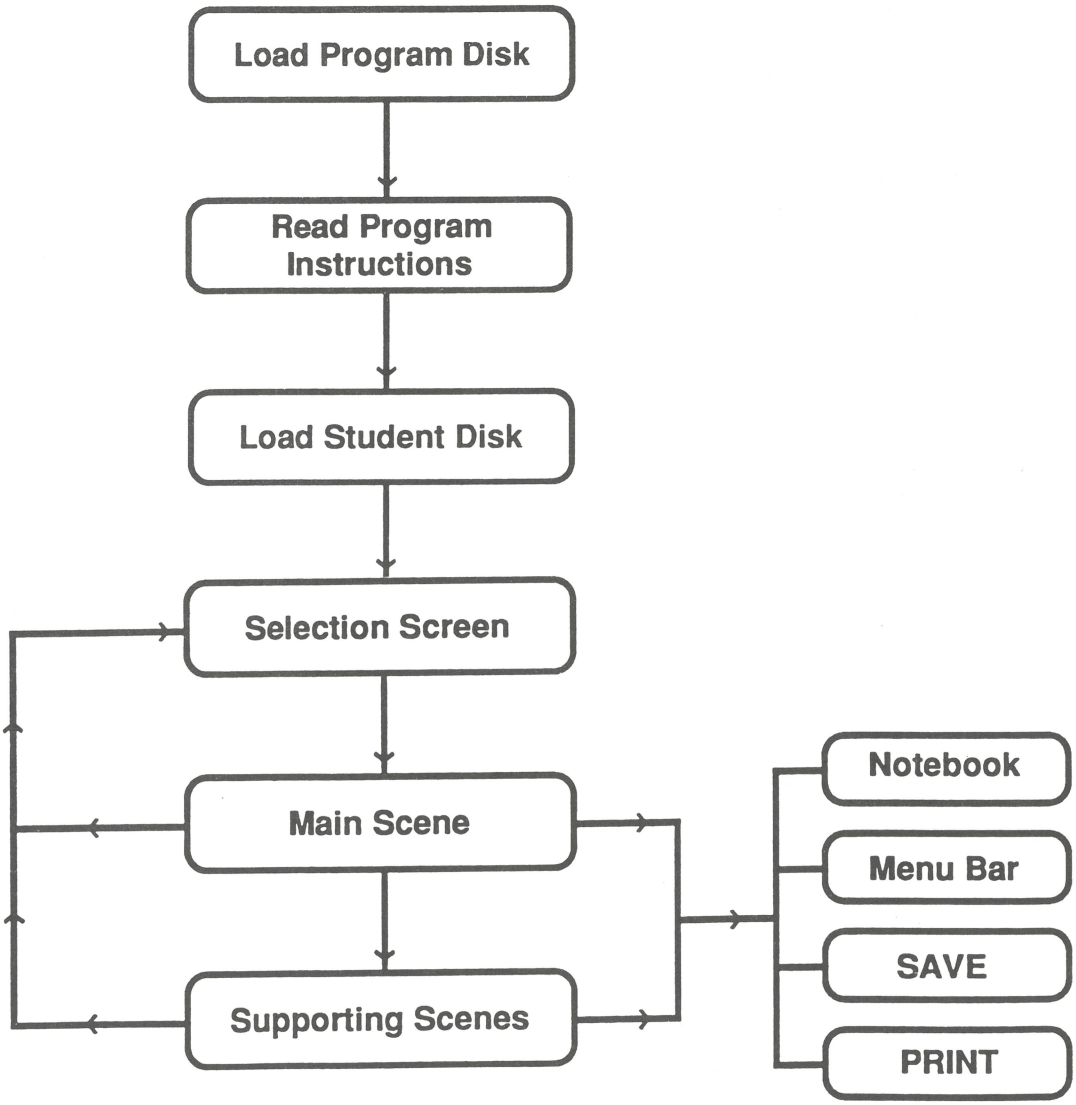
Students can work through the units as they choose. It is often worthwhile to work with the simulation first. Each simulation can be replayed as often as desired. Then students can use the supporting scenes to help them reflect on what they observed in the simulation. They can return to the simulation with an improved awareness of what is going on. They can also work on the main and supporting scenes concurrently, by "flipping" back and forth, if this helps them to understand the concepts better. Thus, students can vary their approaches to suit individual learning styles.

Grade Level

This program is designed for the upper primary and lower intermediate grades.

The following is a simple flowchart of the program organization.

Flowchart


Load Program Disk
Read Program Instructions
Load Student Disk
Selection Screen
Main Scene
Supporting Scenes
Notebook
Menu Bar
SAVE
PRINT

Getting Started

The *Science Corner: Planet Earth* package comes with one copy of each disk. See SVE's "Copy Our Disks" program sheet at the back of this manual for information on how to make five copies of the Program Disk. The Student Disk is a data disk and is not copy protected. You may make as many copies of it as you need.

Equipment Needed

This program will operate on an Apple IIc, IIGS, or an Apple IIe with 128K. One disk drive is required. A mouse and color monitor are strongly recommended.

Cautions

Disks should always be handled with extreme care to avoid erasing the information stored on them. The following precautions will minimize problems:

- Never touch the magnetic surface of the disk.
- Do not leave disks where they can collect dust. Always keep disks in disk jackets unless they are being used in disk drives.
- Do not turn the disk system off with a disk in the drive. Magnetic fields generated by the drive's motor may alter the data in the disk.
- Do not press any keys when the red light on the disk drive is on. This means the disk is turning and the computer is searching for information.

Loading the Program

1 Insert the Program Disk into the disk drive.
Note: *Science Corner: Planet Earth* works best with a single disk drive. If you wish to use a second drive, you change the SETUP only when you are ready to use the Student Disk. (See the **SETUP** section in this guide.)

2 Close the door to the disk drive.

3 Turn on the Apple computer and the monitor. This will load the program.

4 A red light on the disk drive will turn on. If the disk drive light does not turn off in about ten seconds, turn the Apple computer off and make sure your disk is placed correctly in the disk drive.

5 The SVE screen will appear, followed by the title screen of *Science Corner: Planet Earth* and an information screen. For program instructions, click on . To continue, follow the instructions as indicated on the instruction screen.

Turning Off the System

1 Remove the disk.

2 Turn off the Apple computer.

3 Turn off the monitor.

Disk Program Instructions

From the instruction screen on the Program Disk, the user can click on to gain access to the program instructions. The program instructions include information about how to select and explore. It is important to become familiar with the program instructions before continuing.

How to Select
Science Corner: Planet Earth functions in a "point and select" fashion. When the program has been loaded, there is a small white arrow at the top of your screen. This is called the "pointer." To work with an item on the screen, move the pointer to the item and "click" on the item.

Mouse: If using a mouse, "clicking" means pressing the mouse button. To "drop" something, click again.

Keyboard: If using the keyboard, press the ⇧⇩⇦⇨ keys to move the cursor. Hold down the ⌘ to move faster. To "click," press the option key (or ⌥). To "drop" something, press the option key (or ⌥ key) again.

Other Input Devices: With a joystick, a Touch Screen, or a KoalaPad, "clicking" means pressing the control button.

How to Explore
Select one of the five units from the *Selection Screen.* Clicking on these signs takes you to other screens.

gives you general instructions or information in a text window. To close the text window, click on it.

gives you more specific information or directions in a text window. To close the text window, click again.

gives you questions to think about and possibly answer in your Notebook. To close the text window, click on it.

takes you back to the *Selection Screen.* From there you can choose another unit to work on.

takes you to the Notebook, where you can record your observations and do individualized writing.

takes you to the next scene.

takes you back to the previous scene. From the Notebook, ⇦ takes you back to the scene you were just on.

reopens the screen you are on.

You are sometimes told to explore by "dropping" or "waving" items in the scene.

Dropping
In this program, to "drop" something means to do the following:
1 Click on it to pick it up.

2 Move it to the right place.

3 Click again to drop it.

4 Move the pointer away.

Waving
In this program, to "wave" something means to do the following:
1 Click on it to pick it up.

2 Move it over a target.

3 Move it away.

4 Click again to drop it.

Writing
To write in the Notebook or on any scene, place the pointer where you would like your text to begin, and start to type. When you want to go to the next line, press the RETURN key. The computer will "beep" if your typing reaches the end of the screen. If you have begun a word you can't finish on a line, use the DELETE key to erase the last few letters, and start the word over on the next line.

Some of the more important words associated with the scene are available in the menu and can be put into the scene as labels or as part of some writing (see **How to Use the Menu Bar**).

You can reposition any line of text on the screen by clicking on it, moving it, and clicking again to drop it. When you are handling text, you can also use the RETURN Key to drop something.

You can edit a line of text by clicking on it and erasing

one letter at a time from the end of the line by pressing the DELETE key (backspace delete). You must then retype any letters you want to replace. If you want to delete something on another line, position the pointer where you want to begin deleting, click on that spot, then press DELETE.

If you wish to save your writing, you must save the scene before going on to another scene (see **SAVE**). Students can print any Notebook page or any scene (see **PRINT**).

Suggested Steps for Using the Program

This program allows for variation and flexibility as the student explores. However, the following general procedure is a good one to use, especially when becoming familiar with the program.

Encourage students to do the following:

1 Form teams of two or three people. Encourage them to discuss what they discover and what they want to learn. (Answer questions that are asked and ask students questions of your own.)

2 Select the topic their team wishes to explore, then review the main scene. (The main scene is the first scene for each topic in this program.)

3 Select to read the general directions about what to do in the scene.

4 Use the directions as a guide to exploring the scene. If there are several steps to take, remind students that they can always reopen the directions.

5 Click on to get more specific information and directions as needed.

6 Click on any they may find and read over the questions to think about.

7 Click on **to go to another supporting scene.** Explore and study this scene. There may be another **to go to** another supporting scene. If so, follow it and explore and study that scene.

8 Use the Notebook option to record observations, discoveries, answers, and questions (using pen and paper is another option). There is at least one Notebook per unit. The Notebook provides an easy way of "thinking on the screen." Write in their own words what they saw or questions about things they don't understand (see **Writing**).
Note: Any writing in the Notebook should be saved before continuing (see **SAVE**). Notebook pages can also be printed (see **PRINT**).

9 Use to review or replay any scene.

10 Stop work on a topic at any time and return to the main selection screen by clicking on .

Research
The five topics in this program initiate a process of inquiry. Students will broaden and deepen their understanding by extending their inquiry with further research. They will find additional information in library books, film or filmstrip collections, magazines, and on TV.

Writing
It is very important that students express in writing what they have learned. While the Notebook is a convenient means for on-screen note-taking, the program does not permit students to do extensive writing. Therefore, students should be encouraged to do further individualized writing about the unit with pencil and paper or, preferably, with a word processor. In many cases, this writing might be based on the notes they have taken in their Notebooks. They can develop their personal reactions to the ideas presented, report on additional research they have done that is related to the unit, or elaborate on answers to questions posed by the program or by them.

Illustrating Reports
Scenes from the program can be printed to illustrate reports that students might create. To some extent, students can rearrange the scene, add characters and objects to it, and write directly on it. These new scenes can be saved and printed in color or black and white. (See **How to Use the Menu Bar, SAVE, and PRINT.**)

The Units: Organization and Description

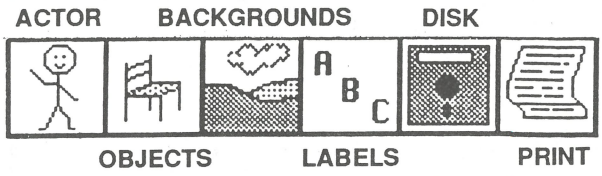
Continental Drift: Organization and Description
- **Main Scene:** Students move continents onto a partial map of the world to see how a supercontinent may have been formed long ago.
- **Supporting Scene:** Students read about how continental drift causes earthquakes and volcanoes. Students then interact with a world map to cause the continents to drift.
- **Notebook**

Earth Layers: Organization and Description
- **Main Scene:** Students explore and read information about the layers of the Earth, investigate temperatures, and learn the distance to its center.
- **Supporting Scene:** Students learn about digging and drilling at different depths.
- **Notebook**

Earthquakes: Organization and Description
- **Main Scene:** Students observe pressure on a fault line.
- **Supporting Scene:** Students study the effect of an earthquake on three houses located different distances from where the earthquake occurred.
- **Supporting Scene:** Students observe earthquakes around the world and the co-occurrence of earthquakes and volcanoes.
- **Notebook**

Volcanoes: Organization and Description
- **Main Scene:** Students simulate a volcano eruption and observe the results.
- **Supporting Scene:** Students read brief descriptions of parts of a volcano.
- **Supporting Scene:** Students explore a world map on which earthquakes and volcanoes are indicated.
- **Notebook**

Erosion: Organization and Description
- **Main Scene:** Students explore the effects of five natural forces that cause erosion in a coastal environment.
- **Supporting Scene:** Students have an opportunity to learn about the five forces of erosion depicted in the main scene: ocean waves, gravity, freeze/thaw, wind, and running water. Point out to students that these forces affect our environment in more ways than are depicted in this scene.
- **Notebook**



How to Use the Menu Bar

The **Menu Bar** is available on the Program Disk Instruction screens and all Student Disk screens by pressing ESC. If you have selected an ACTOR, OBJECT, or line of text, you must first drop it before you can select the **Menu Bar**

The **Menu Bar** contains six options: ACTORS, OBJECTS, BACKGROUNDS, LABELS or WORDS, DISK OPTIONS, and PRINT OPTIONS. To close the **Menu Bar,** click anywhere else on the screen, except on the **Menu Bar.**

ACTORS are animated characters and things that can be added to scenes. Click on ACTORS (the "dancing person" icon) to open it. Then click on either arrow to scroll through the actors. To add an actor to your scene, click on it, put it in your scene, and click again to drop it.

OBJECTS are inanimate things; BACKGROUNDS allow you to change scene background colors. LABELS are words for things associated with that topic. All of these can be added to the scene in the same way as the ACTORS.

DISK gives you disk operating tools. Two options are visible when DISK is selected: OPEN and SAVE. Two other options, SETUP and DISK UTILITIES, are not visible. They are made available by pressing Control-T (TEACHER UTILITIES) after clicking on the DISK icon.

Visible Disk Options

OPEN: This option makes it possible to open any file on the disk, either those that came with the disk or those saved by users. After clicking on OPEN, click on the arrows below the file name to scroll through the names of any other files on the disk until you find the one you want (if no files have been saved, the only name will be EARTH). Next, click on the arrow under the scene number to pick the scene you want to open. To open the scene, click anywhere in the long upper box containing the name and number.

Here are some important scene numbers:

The scene number for the Planet Earth selection screen is: EARTH 2.

The scene numbers for the five main scenes of the program are:
Continental Drift–EARTH 14
Earth Layers–EARTH 3
Earthquakes–EARTH 10
Volcanoes–EARTH 6
Erosion–EARTH 18.

SAVE: The SAVE option is used to save scenes created or changed by users on the Student Disk. To save a new scene, you must give it a new name (it should *not* be named EARTH). After clicking on SAVE, you will see the name of the scene you were working on. Click on NEW NAME, and then type in a meaningful file name (you may want to use your own name or the name of your group). Select NEW NUMBER, then type a number for your scene. To save your scene, click on the box that has your new name and number in it.

Make sure that students understand that any work or writing they have done on a scene will be lost if they move on to another scene without saving.

A red "thermometer" line at the bottom of the SAVE box indicates how much space is left on the disk for saving files. If the red line approaches the right, the disk is almost full. If the disk is full, delete unwanted scenes or save on another Student Disk. The original disk scenes are locked to protect them. Students can also save their own files on blank, PRODOS-formatted disks, if they choose.

Once you have saved a scene under a new name, you may want to return to it. You can do so any time the **Menu Bar** is visible (see **OPEN**).

Invisible Disk Options

As noted above, to view the teacher utilities, it is usually necessary to press CTRL-T while the *visible* disk options are displayed.

SETUP

Normal Setup:

Print	Current Page
Printer Type	ImageWriter II
Card Type	Serial
Printer Slot	1
Student Disk	Slot 6 Drive 1
Setup and Disk Utilities	Off Menu

Alternative setups:

Print	Entire Book
Printer Type	Scribe Epson Okidata ImageWriter
Card Type	Parallel Grappler Automatic Ice Digicard Appletalk
Printer Slot	2, 3, 4, 5, 6, 7
Student Disk	Slot 6 Drive 2 **Note:** Other alternative student disk settings will be determined by your particular computer system.
Setup and Disk Utilities	On Menu

You may need or wish to change these settings to use the program on your system.

To change SETUP, click on any one of the right-facing arrows to scroll through the options until you find the one you want. If your printer type does not appear, try several of the options offered and attempt to print. It is likely that one of the options will work with your printer. You can try the same procedure if you have a printer card that is not listed. To save the settings you have changed, put your Program Disk in the disk drive. Move the pointer to SAVE TO DISK and select it. Doing so will make these changes available the next time you use the program. If you do not save the changes, they will not be available and it will be necessary to change the setup again.

Note: Changes to *Slot* and *Drive* for Student Disk cannot be saved on the Program Disk. If you wish to use a different drive setup you must change the setting each time. Because the program uses only one disk at a time, it is recommended that the Student Disk be put in your boot drive.

DISK UTILITIES

This allows the teacher to lock, unlock, or delete scenes on a Student Disk. From the expanded CTRL-T Disk menu, click on DISK UTILITIES, then choose the name of the scene you want to work with by clicking on the arrows under the name. Select the number of the scene you want to work with by clicking on the arrow under the scene number.

LOCK: Locking a scene protects it from being deleted or replaced by accident. To lock a scene you have chosen, click on LOCK, then click on the name box. The * which appears to the left of the page number tells you that the scene is locked. A locked scene can always be unlocked to save new changes.

UNLOCK: By unlocking a scene it is possible to delete, replace, or resave it. To unlock a scene you have chosen, click on UNLOCK, then click on the name box.

DELETE: Deleting removes a scene permanently from the disk. Use DELETE to remove scenes you no longer want to keep. To delete a scene you have chosen, click on DELETE, and then click on the name box. You are asked to verify if you want to delete that scene. Select YES to delete.

Note: Always be very careful when you delete a scene. Be sure you are deleting the scene you want to delete. Student files are locked on the disk provided. Unlocking or deleting any EARTH files will seriously damage your disks!

PRINT OPTIONS

This is the last option on the **Menu Bar.** Any scene can be printed. Before printing, check the SETUP to make sure your printer card and printer selections are correct. Also, make sure your printer is connected and turned on. To print a scene, click on PRINT from the **Menu Bar** and follow the directions.

Only if your setup is set to an Imagewriter II printer will you be given the option to select LARGE COLOR, SMALL COLOR, or BLACK and WHITE printing. Of course, you must have a color ribbon installed before you can print in color. A large color image will cover about one half of a page of paper. A small color image will cover about one eighth of your printer paper.

Trouble-Shooting Guide

This section lists problems that sometimes occur, along with likely causes. If these solutions do not help, try running the program on another computer to determine if there is a hardware problem.

If the Program Disk will not load, check the following:

Do you have the Program Disk in Drive 1?
Is the disk inserted with the correct side up?
Is the disk drive door open?
Is the disk drive properly connected to the computer?
Is the computer's memory at least 128K?
Does the computer have a high-resolution graphics chip?
Has the high-resolution graphics block been connected to the 128K card?

If the program does not move past the title screen,

Have you inserted a Student Disk?

If you cannot open another unit or file, check the following:

Is the Student Disk on the correct side?
Are all necessary files on the disk?

If the pointer does not move, check the following:

Was your inputting device plugged in before loading?
Is it correctly plugged in?
Is your mouse card connected properly in Slot 4?

If the pointer has disappeared, check the following:

Has the pointer been completely moved off the screen?
Is the computer trying to print?
Have you selected an actor, object, background, or word, and not yet clicked to position it on the scene?

If an actor has disappeared, check the following:

Has the actor been completely moved off the screen?
Did you press the DELETE key while the actor was selected

If an actor's animation has stopped, check the following:

Has another actor, object, or label been placed on top of it?
Are there too many actors in the scene?
Was this actor a duplicate created with the SPACE BAR? (Duplicates will not animate.)

If the computer displays an error message, check the following:

Is the disk drive open?
Is the correct disk in the drive?
Are there too many objects, actors, or text letters in your scene?

If you cannot save a scene, check the following:

Is the scene locked?
Does a scene with the same name and number already exist?
Is the Student Disk in the correct drive according to SETUP?
Is the disk full?
Is the disk damaged?
Is the disk drive malfunctioning?

If the actors will not move, check the following

Are there too many actors and objects in the scene?
Is the actor behind another actor, object, or label? (Only the actor on top will move.)

If a scene will not print or prints incorrectly, check the following:

Is the SETUP correct?
Is the printer's "select" button on?
Is the printer hooked up, turned on, and plugged in properly?
Is the paper centered properly?
If you were using another program, did you shut off the printer and restart it with your SVE Program Disk?

If ESC will not open the Menu Bar, check the following:

Have you selected an actor, object, background, or word and not yet clicked to position it on the scene?

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SVE Basic Skill Boosters 20606-SB

Science Corner: Planet Earth

Know These Words!

Getting Ready

Continental Drift

TV Special!

Pieces and Parts

See the Layers!

I Feel the Earth Move!

Evacuation Time

Volcanoes!

Special News Bulletin: Volcano Erupts!

A Change of Scenery

Test It Out!

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Science Corner

Skill Objectives:
- to review computer terms
- to decipher a word puzzle

Use with the program: Planet Earth

Name_____

Know These Words!

Look at the words at the bottom of the page. Try to find them in the puzzle. Circle them as you find them, then check off each word. The first one has been done for you.

P O I N T E R I S S
R I T E L L O N E T
O M L E T R O L L U
G O B I N S P E E D
R N E S A V E L C E
A I D L O O N T T N
M T R B L E R A N T
D O I T C L I C K D
I R V D E L E T E I
S C E M E N U R I S
K L B E P R I N T K
E S T A B L E N O T
L I M O U S E B I T

✓ save	__ open	__ program disk
__ pointer	__ menu	__ student disk
__ mouse	__ monitor	__ delete
__ print	__ select	__ click

Note: If you don't know what these words mean, check the user's card before you start exploring *Planet Earth.*

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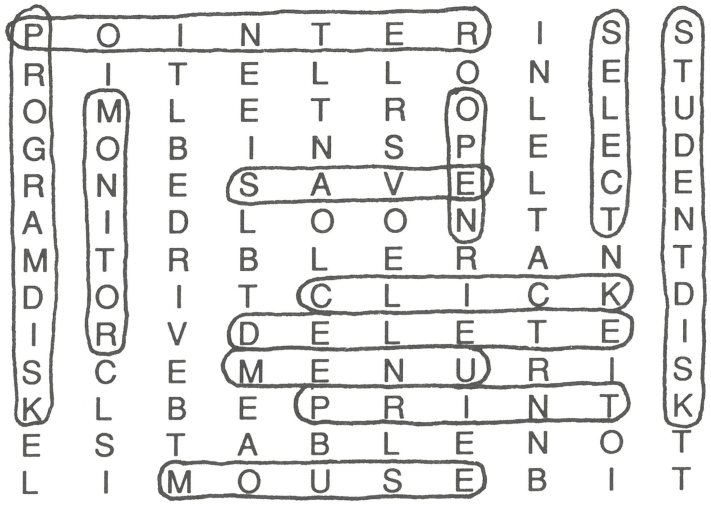
Skill Objectives:
- to review computer terms
- to decipher a word puzzle

Use with the program: Planet Earth

Answer Key



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Skill Objectives:
- to review program-user terms

Use with the program: Planet Earth

Name_____

Getting Ready

Fill in the blanks with the following words.

menu bar	print	page icon
notebook	save	disk drive
student disk	the arrow keys	ESC key

1 If you don't want to lose your work, you must _____ it.

2 If you want to take your work home, you can _____it.

3 If you want to take notes, you can use the _____.

4 If you want to move the pointer with the keyboard, press_____.

5 If you want to start, put the program disk in the _____.

6 If you want to explore the science lessons, put in the_____.

7 If you want to use OPEN, first click on the _____.

8 If you want to use the menu bar, one way to get it on the screen is to press the

_____.

9 If you want general instructions or information on the screen lessons, click on the

_____.

Note: If you don't know any of these words, check the user's card before you start exploring *Planet Earth.*

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Skill Objectives:

- to review program-user terms

Use with the program: Planet Earth

Answer Key

1 save

2 print

3 notebook

4 the arrow keys

5 disk drive

6 student disk

7 menu bar

8 ESC key

9 page icon

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Science Corner

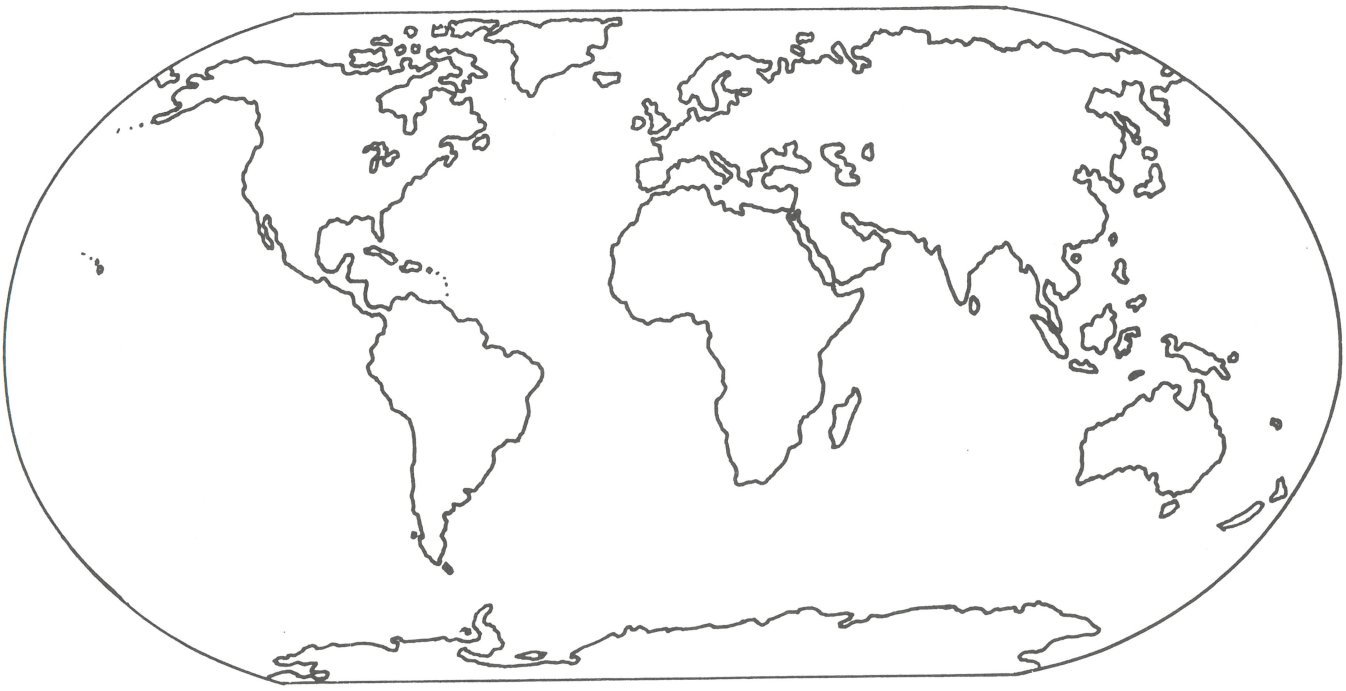
Skill Objectives:
- to learn more about continental drift
- to practice using research skills

Use with the program: Planet Earth

Name_____

Continental Drift

Look at the world map below. Then follow the directions in #'s 1-5.



1 Write in the name of each continent on the map.

2 Go to the library and find out the names of the major crustal plates on the earth's surface. Draw black lines on your map to show the plates. Next, label each plate on the map.

3 Cut the map apart at the plate boundaries. Shift the continents back and forth to show the continents drifting.

4 On the back, describe what continental drift is.

5 The "supercontinent" is called *Pangaea*. The word has two parts: *pan* and *gaea* (geo). Use your dictionary to figure out what *Pangaea* means. Write your answer here.

Pan: _____ Geo: _____

Pangaea:_____

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Skill Objectives:
- to learn more about continental drift
- to practice using research skills

Use with the program: Planet Earth

Answer Key

1 North America, South America, Australia, Europe, Asia, Africa, and Antarctica

2,3 Answers and map will vary, but should show that students have researched crustal plates and plate boundaries.

4 Answers will vary, but should read something like this: continental drift is the slow shifting of continents due to weakness in the earth's crust.

5 Pan: all; Geo: earth; Pangaea: all of the earth

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Science Corner

Skill Objectives:
- to practice using foresight
- to practice interviewing techniques

Use with the program: Planet Earth

Name_____

TV Special!

We now know that the plates on the earth's surface are shifting slightly all the time. And, we know that scientists generally believe there was once a "supercontinent." Imagine that it is millions of years from now and the plates have shifted again into a "supercontinent." People are no longer separated by oceans. Plan a talk show where you or your classmates are being asked such questions as: What is life like on this supercontinent? How are people, language, music, food, culture, government, and other things affected?

Follow the steps below to help organize your talk show.

1 As a group, discuss what life would be like on a "supercontinent."

2 Decide who will be the talk-show host, then make up a list of questions he or she will ask the guests.

3 Now prepare for the show. Arrange chairs for the interview. Get a microphone or other props you might need.

4 Start the show. The host can introduce the show, then call on different people to come up and be interviewed.

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Skill Objectives:
- to practice using foresight
- to practice interviewing techniques

Use with the program: Planet Earth

Answer Key

Encourage students to think about as many possibilities as they can. If you have a video camera available for use, you might like to tape the session for further viewing and discussion.

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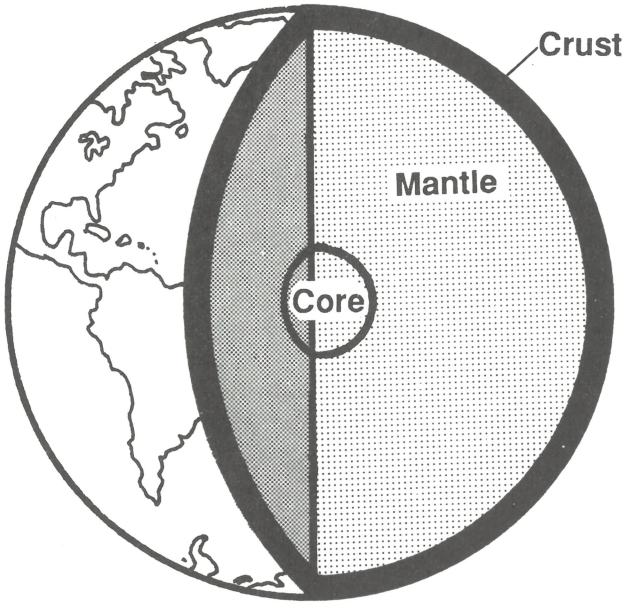
Skill Objectives:
- to review the concept of the earth's layers and their characteristics
- to make inferences

Use with the program: Planet Earth

Name_____

Pieces and Parts

Study the picture below, which shows a cross-section of the earth. Then read each statement. Write *CR* if it describes the *crust,* *M* if it describes the *mantle,* and *C* if it describes the *core.*



1 The rocks are under high pressure. _____

2 It is the earth's outer layer. _____

3 It is the hottest place on earth. _____

4 It is a thick, rocky layer. _____

5 It is about 5-20 miles thick. _____

6 It is about 1800 miles thick._____

7 It is the middle of the earth._____

8 It is thin._____

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Skill Objectives:
- to review the concept of the earth's layers and their characteristics
- to make inferences

Use with the program: Planet Earth

Answer Key

1 The rocks are under high pressure. M

2 It is the earth's outer layer. CR

3 It is the hottest place on earth. C

4 It is a thick, rocky layer. M

5 It is about 5-20 miles thick. CR

6 It is about 1800 miles thick. M

7 It is the middle of the earth. C

8 It is thin. CR

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Science Corner

Skill Objectives:
- to learn more about the earth's layers

Use with the program: Planet Earth

Name _____

See the Layers!

1 Slice an apple or a hard-boiled egg in half. Label each part with a matching layer of earth.

2 Library time! Go to the library and do some research on the earth's layers. Try to find out more about what each layer is like. Use an encyclopedia or special book about earthquakes. Write your information in the lines below. Share your information with the class and together make a chart to display in the classroom.

_____

CRUST

_____

MANTLE

_____

CORE

_____

3 The earth's surface differs from place to place. What would you find if you dug a hole near your home? _____

How far do you think you would have to go before you hit water, rock, sand, or clay?

_____

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Skill Objectives:

- to learn more about the earth's layers

Use with the program: Planet Earth

Answer Key

1 On the apple, the skin=the crust; the area from the outer core to the skin=the mantle; the core=the core. On the egg, the shell=the crust; the white=the mantle; the yolk=the core.

2 Answers will vary, but should include characteristics of each layer. Students may need help putting together a chart.

3 Answers will vary. If it is possible to get permission, you may want to dig somewhere on the school grounds to see what is beneath the surface. Point out to students that what they find beneath the surface will vary depending on what part of the country they live in.

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Science Corner

Skill Objectives:
- to learn more about why and where earthquakes occur
- to practice research skills

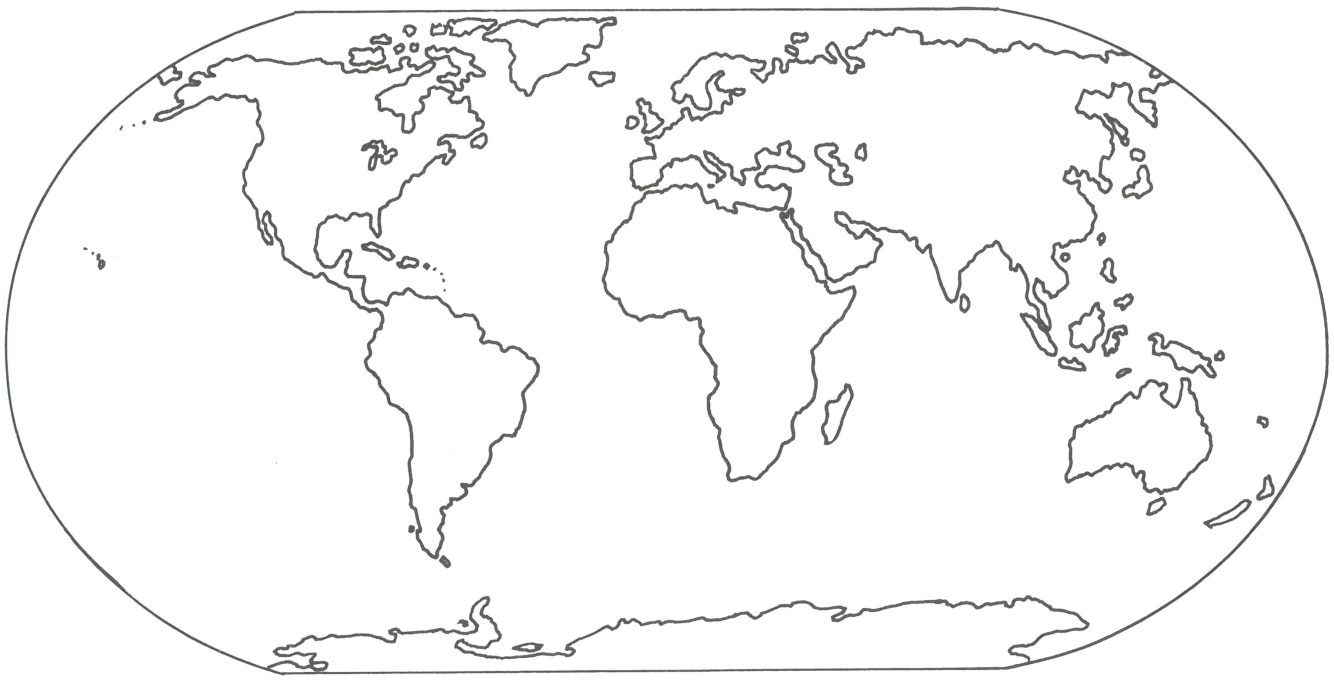
Use with the program: Planet Earth

Name_____

I Feel the Earth Move!

1 Locate the following earthquakes on the map. Write the name and date at each location.

Tangshan, China, 1976
New Madrid, Missouri, 1911
Italy, 1908
San Francisco, 1906
Peru, 1970



2 Try to find out about other major earthquakes, such as the one that took place in Tokyo, Japan, in 1923. On your map, write in the name and date of each earthquake.

3 Earthquakes and volcanoes often happen in the same places. Why do you think they do? _____

_____

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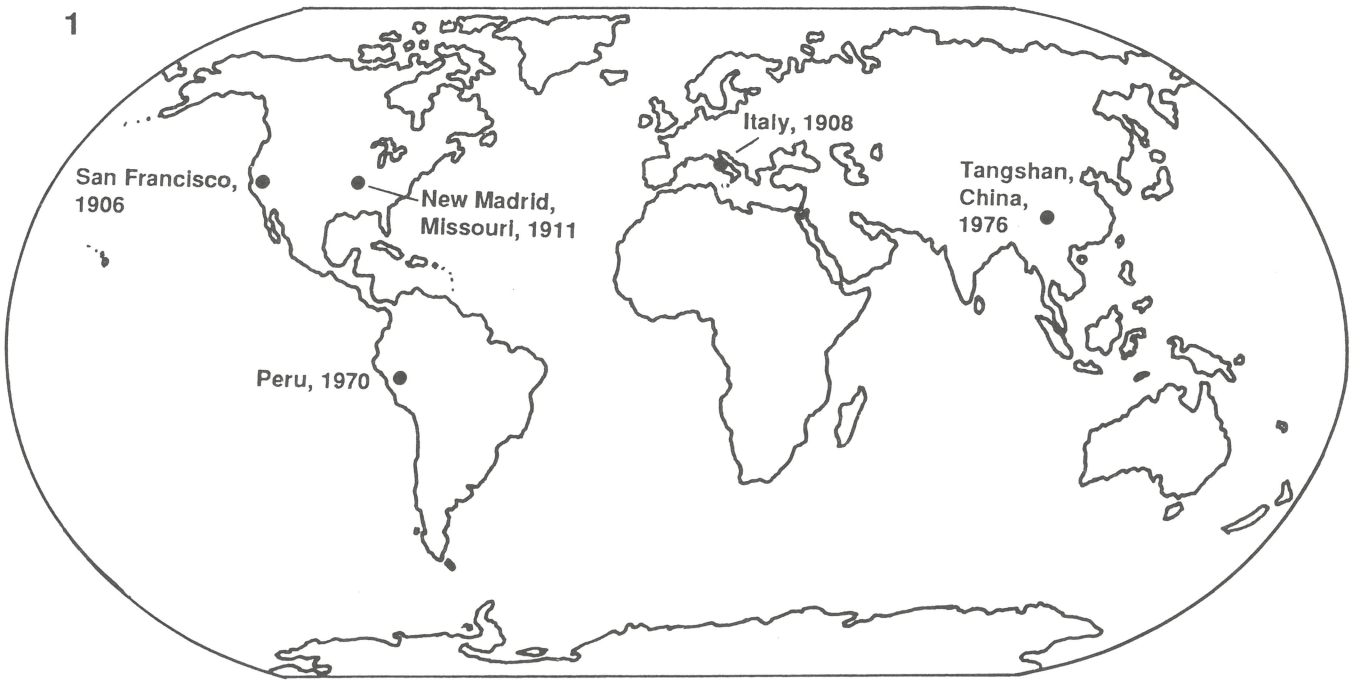
Skill Objectives:

- to learn more about why and where earthquakes occur
- to practice research skills

Use with the program: Planet Earth

Answer Key

1



2 Answers will vary, but should indicate that students have done some research.

3 They both tend to happen along the boundaries of the crustal plates.

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Skill Objectives:
- to consider evacuation procedures in a natural disaster
- to practice planning skills

Use with the program: Planet Earth

Name_____

Evacuation Time

A strong earthquake can be very serious. Many people can get hurt. Buildings can be seriously damaged. Scientists are working hard to learn how to predict earthquakes. If they can tell us when and where an earthquake will occur, hopefully lives will be saved. It is very difficult to do this, though.

Even if scientists could tell us, we would have to know what to do with the information. If you suddenly heard on the television that there was going to be an earthquake near your home the following day, what would you do? One way we could respond well is if everyone where we lived knew what to do and where to go. It's good to plan in advance if a town is in an area where earthquakes are likely to occur.

Follow the steps below to help you plan a practice evacuation.

1 Imagine you live in an area where there might be an earthquake. Make an evacuation plan for your neighborhood. Make your plan specific to your town. Make a map of actual streets. Include these things:

- where people should go during an earthquake
- routes people would take
- where people would go for food, medical care, and shelter
- where communication centers would be set up
- types of transportation people would use

2 Present your plan to the rest of the class. Talk about the different plans.

3 If you do live near a high-risk area, talk about the emergency evacuation procedures that exist.

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Skill Objectives:
- to consider evacuation procedures in a natural disaster
- to practice planning skills

Use with the program: Planet Earth

Answer Key

Answers will vary, but students should develop detailed evacuation plans specific to where they live. Before working with students on this activity, you may want to have a discussion to prevent a panic situation.

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Skill Objectives:
- to have a better understanding of volcanic eruption

Use with the program: Planet Earth

Name _____

Volcanoes!

1 Draw a volcano. Find a picture in a book or encyclopedia to copy or look at the volcano on the Student Disk. Label its parts. Include a crater, cone, central vent, lava, and magma chamber.

2 Make a dark line showing the path the lava follows when the volcano erupts.

3 As a class, you may like to make a model of a volcano, as follows:
Use aluminum foil to make the cone. Make a crater at the top. Put a jar of vinegar inside the cone. The jar should be as high as the crater. Add a teaspoon of baking soda. Stand back and watch the lava flow!

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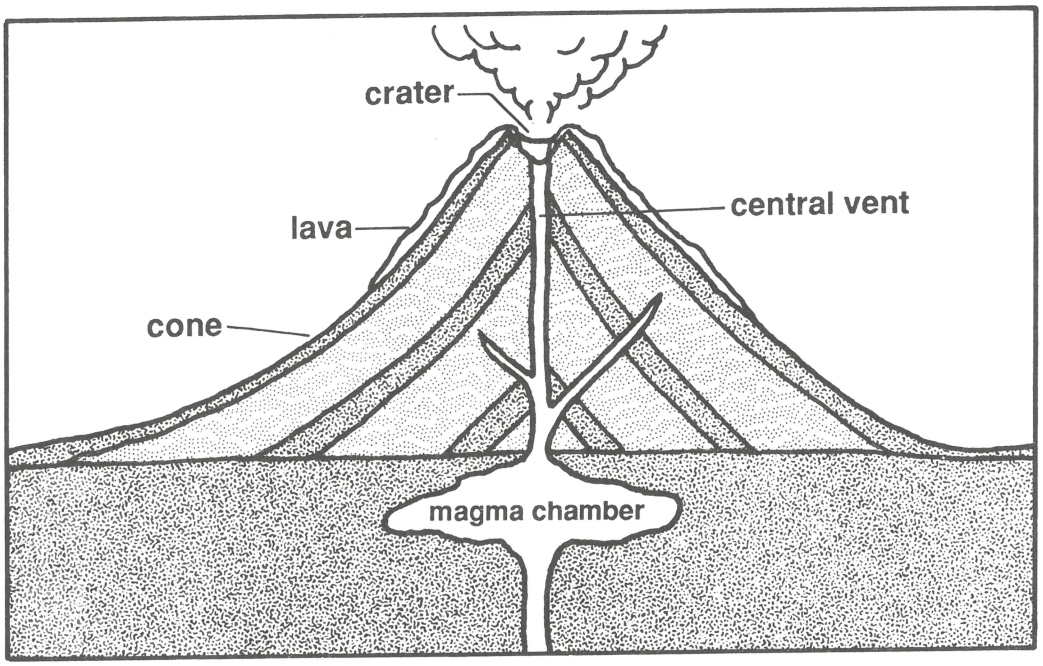
Skill Objectives:
- to have a better understanding of volcanic eruption

Use with the program: Planet Earth

Answer Key

1 Students' pictures should resemble the following:



2 The path of eruption is from the magma chamber at the bottom, up through the central vent in the cone, and down the sides.

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Science Corner

Skill Objectives:
- to learn about past volcanoes
- to write and present a news report

Use with the program: Planet Earth

Name _____

Special News Bulletin: Volcano Erupts!

Some big volcanoes have erupted. Look at the list below.

Krakatoa, Indonesia, 1883
Mt. St. Helens, Washington state, 1980
Paracutin, Mexico, 1943-52
Mt. Pelee, 1902
Surtsey, Ireland, 1963
Mt. Vesuvius, Italy, 79 A.D.

1 Choose one of these volcanoes to write a special news report about. If possible, do some research to learn more about what happened.

2 Make charts or illustrations to present facts about what happened to people, buildings, and the area.

3 Read your report to the class as if you were a news reporter on radio or television.

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Skill Objectives:
- to learn about past volcanoes
- to write and present a news report

Use with the program: Planet Earth

Answer Key

Answers will vary. You may want to schedule library time for students to do their research. If you like, set up a special television or radio stage set in the classroom.

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Skill Objectives:
- to explore some of the forces of erosion

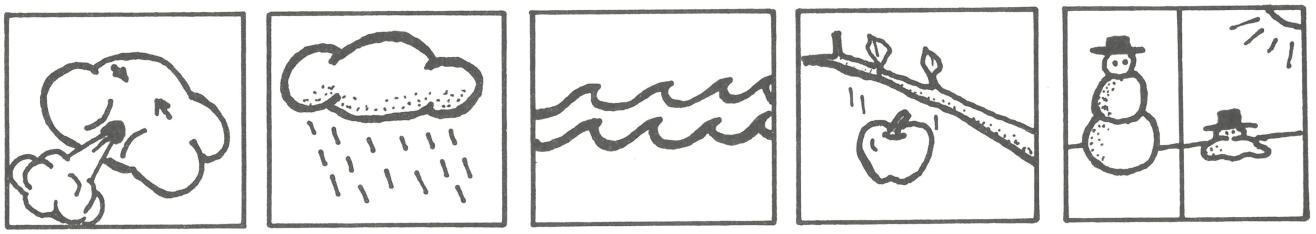
Use with the program: Planet Earth

Name_____

A Change of Scenery

1 Cut out a landscape or a seascape from a magazine or draw one.
Add forces of erosion to different spots by drawing in the symbols below. On a separate piece of paper describe what the changes would be at each spot.

Use:



2 Discuss your pictures in small groups.

3 Sometimes people do things that cause erosion; for example, clear-cutting forests and plowing fields incorrectly. Try to list other examples._____

_____

4 What are some things we can do to slow down erosion?_____

_____

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Skill Objectives:
- to explore some of the forces of erosion

Use with the program: Planet Earth

Answer Key

1 and **2** Pictures and answers will vary.

3 Answers will vary. Possible answers might include: building too close to the coast, developing river banks too much, removing rocks and trees that retain water.

4 Answers will vary. Possible answers include: cut trees carefully; do not build too close to the coast; develop riverbanks carefully; provide drainage so that water doesn't build up on roads and then freeze (causing frost heaves).

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Skill Objectives:
- to consider the forces of erosion in different environments

Use with the program: Planet Earth

Name_____

Test It Out!

Try the following experiments. Write down your observations.

1 Spray water from a hose onto two surfaces: a grassy hill and a road or driveway. What is the difference in the speed and amount of the runoff?

_____

_____

2 Part A: Fill a plastic container with water. Mark the water level on the side of the container. Freeze it. What happens to the volume?

_____

Part B: When rain runs into cracks on rocks and freezes, what happens?

Why?_____

_____

3 Lean a board against a chair. Roll a ball down it, starting at the top of the board. Let the ball roll on the floor until it stops. Then roll a ball down again, this time beginning at the middle of the board. Which time does the ball roll the farthest on the floor?_____

_____

_____

What does this tell us about the effect of the incline of a slope? _____

_____

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Skill Objectives:
- to consider the forces of erosion in different environments

Use with the program: Planet Earth

Answer Key

1 There is more runoff and the water flows faster on the road or driveway.

2 Part A: The volume of the frozen water is greater.
Part B: The rocks start to break apart because the water expands when it freezes.

3 The ball rolls farther on the floor if released from at the top. The steeper the slope, the more momentum the ball builds up. The effect of gravity is felt more.

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